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The First Record of the Intertidal Oribatid
Genus, *Fortuynia*, from Asia

With 6 Text-figures

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ABSTRACT *Fortuynia elamellata shibai*, a new subspecies of oribatid mite, was described from Shikoku, Southwest Japan. It is the first record of an oribatid inhabiting intertidal zone of Japan. The new subspecies is distinguishable from the nominate subspecies, *F. elamellata* Luxton from New Zealand, by the relative length of notogastral setae and position of aggenital setae.

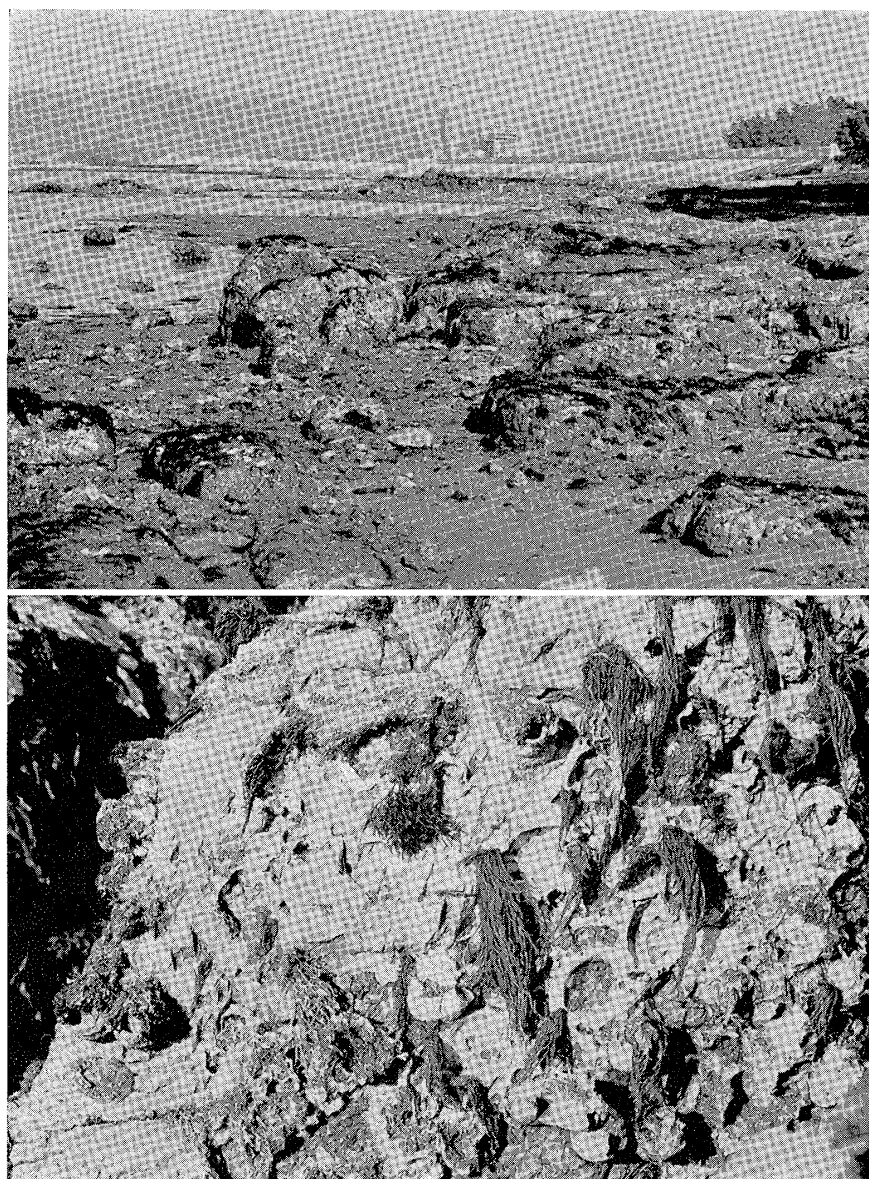
The members of the family Fortuyniidae together with those of the family Ameronothridae are known as exceptional oribatids whose habitats are intertidal. The family contains at present a single genus *Fortuynia* including three species. The first representative of the genus was collected by van der Hammen among algae growing on stones in the intertidal zone of Biak Island, Netherland New Guinea, and in 1960 it was described by him as *Fortuynia marina*. He reported in 1963 the second species, *F. yunkerii*, based on the material collected from empty barnacle shells in the intertidal zone of Panama. The third species, *F. elamellata*, was described by Luxton (1967) from New Zealand. This species was collected from rock crevices in intertidal zone.

In the course of the taxonomic and ecological investigations on the mites of intertidal zones in Southwest Japan, Minoru Shiba, Asst. Prof. of Matsuyama Shinozono Junior College, found a large number of an oribatid species among other Acari. I studied a part of the specimens sent to me for identification and found the oribatid to be a member of the genus *Fortuynia*. The genus has not hitherto been known from Japan, even from Asia. A further detailed study revealed that the mite was very closely related to *F. elamellata* Luxton known from New Zealand. The Japanese form is, however, somewhat different from the New Zealand one in several characters and is described below as a new subspecies.

Fortuynia elamellata shibai subsp. nov.

(Figs. 3–6)

Prodorsum. Lamellar setae fine and glabrous; in front of their setal insertions



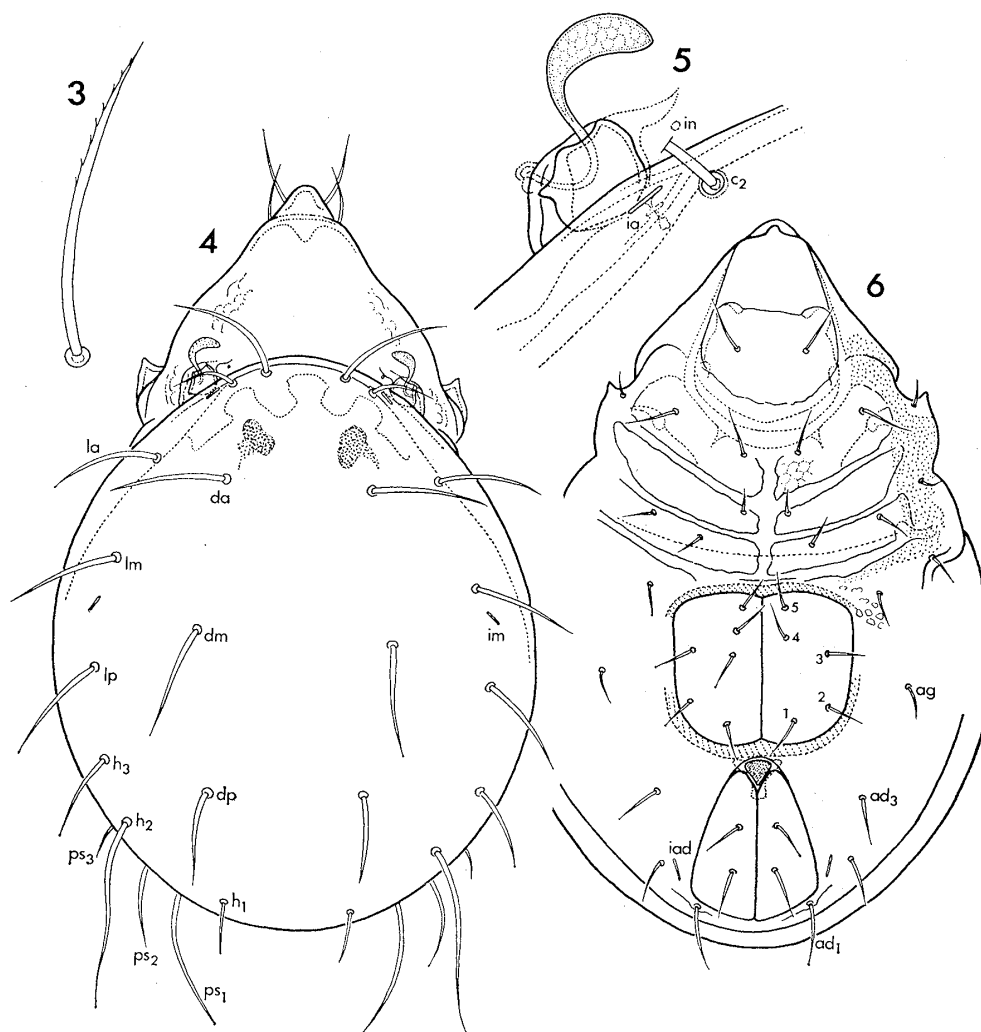
Figs. 1–2. The habitat of the intertidal oribatid mite, *Fortuynia elamellata shibai* subsp. nov. — 1 (top). View of the intertidal zone at Shiraishi-no-hana of Wake, Matsuyama City, in an ebb tide condition. — 2 (bottom). Close up of a rock covered with sea algae and dead shells of oysters, among which the oribatids are dwelling.

(Photo by M. Shiba)

is found a faint translamella-like ridge. Rostral setae weakly barbed unilaterally, being distinctly longer and thicker than rostral ones. Interlamellar setae absent, only thier insertion pores being detected inside bothridia. Each bothridium with a small spur on the lateral margin. A short curved ridge attached to the lateral side of bothridium (Fig. 5). Lamellar ridges *ci* and *ce* absent. Sensillus sigmoid, the head being oriented medially.

Notogaster. Fourteen pairs of notogastral setae rather thick, gently curved and weakly barbed on their distal half; relative lengths of the setae to the notogastral length ranging from 6 to 33; the order in length: $h_2 > ps_1 > c_1$, $da, dm, la, lm, lp > ps_2 \geq dp > c_2 > h_1 > ps_3$; seta h_2 the longest, being somewhat winding with a flagelliform tip; seta da nearly equal in length to, or only slightly longer than, seta la . Lyrifissures ia aligned parallel to the notogastral margin; fissures im aligned obliquely, converging anteriorly as shown in Fig. 4 or diverging anteriorly. Behind setae c_1 and c_2 , below the notogastral integument, exist a pair of dark pigmented structures, consisting of a large number of small, polygonal granules; the lateroposterior extension of the structure consists of granules smaller than those of the main part.

Ventral side. Genital and anal plates darker than ventral as well as epimeral plates. Genital plates bear typically 5 pairs of setae and anal ones typically 2 pairs of setae; sometimes, however, an additional seta appears on either side of genital or



Figs. 3-6. *Fortuynia elamellata shibai* subsp. nov. — 3. One of notogastral setae. — 4. Dorsal. — 5. Bothridium, sensillus and their vicinity. — 6. Ventral.

anal aperture. Figure 6 shows an asymmetrical chaetotaxy as an example of such abnormal cases. Aggenital setae *ag* situated a little anterior to the level of genital setae *g*₂, so that the distance *ag*–*ad*₃ is always larger than that of *ad*₃–*ad*₂. Adanal fissure *iad* typically level with *ad*₂. Epimeral chaetotaxy: 3–1–3–2. Borders of coxisternal region covered with fine granules, though Luxton (1967) stated in his description of *F. elamellata* that they are “coarsely punctate.”

Legs. Monodactyle. Genua, trochantera and distal 2/3–3/4 of femora dark brown, while tarsi, tibiae and proximal 1/3–1/4 of femora are light brown. Trochanter IV with a sharp spur, but on trochanter III the spur becomes indistinct. Porose areas on the dark-colored portions of all the femora.

Material examined. Holotype (NSMT–Ac 8550): Shiraishi-no-hana, Wake, Matsuyama City, Shikoku, SW. Japan. 21–VII–1970. M. Shiba leg. from dead oyster shells on rocks in the intertidal zone. — Paratopotypes (57 exs. in spirit and 8 exs. on slides): same data as the holotype. — Paratypes (31 exs. in spirit and 5 exs. on slides): Wake, Matsuyama City, Shikoku, SW. Japan. 29–IV–1972. M. Shiba leg. from a similar habitat. The holotype and most of the type-series are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo, and 3 paratopotypes in the collection of the Hungarian Natural History Museum, Budapest.

Remarks. The new subspecies, *Fortuynia elamellata shibai*, and the nominate subspecies, *F. elamellata elamellata*, have in common the following characters, by which both the forms can be distinguishable from the other two species, *F. marina* and *F. yunkerii*: 1) strongly incurved sensilli, 2) long notogastral setae, 3) setae *ps*₃ lateral in position to *h*₁, 4) adanal fissures *iad* almost level with *ad*₂, 5) a sharp spur on each trochanter IV, and 6) absence of lamellar ridges *ci* and *ce*. However, the Japanese subspecies differs from the nominate subspecies from New Zealand in some features mentioned below. The most remarkable difference is in the length of notogastral setae *da*. The setae of the Japanese form are only slightly longer than the other notogastral setae *la*, 1.03–1.10 × as long as *la*, and shorter than their mutual distance *da*–*da*. According to the figures (fig. 3 A and 4 A) given by Luxton (1967), setae *da* appear to be distinctly longer than *la*, about 1.8 × as long as *la*, so that they are a little longer than their mutual distance *da*–*da*. Aggenital setae *ag* of the Japanese form are situated anterior to the level of genital setae *g*₂, so that setae *ad*₃ are located closer to *ad*₂ than to *ag* and not *vice versa* as in the New Zealand form. Further differences are also detected in the degree of development of pedotecta I and a spur on each trochanter III.

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to Mr. Minoru Shiba who offered me the interesting material and the photographs of the habitat (Figs. 1–2). He also gave me valuable information about the ecological distribution of the mite, but I prefer to restrict the contents of the present paper within a purely taxonomic report, expecting his publication on that interesting matter in near future.

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